

Fiscal Year (FY) 2023 Appropriation Reporting Requirement: PA 166 of 2022, Section 660

The Michigan Department of Transportation (MDOT) continues to work with road construction industries and its many other customers to develop and enhance alternative road surface materials for road construction projects as required by Public Act 166 of 2022, Section 660. MDOT has a long and rich history of looking to incorporate new materials, recycled materials, and new processes into the Department's road construction portfolio. MDOT has been a leader in the use of recycled asphalt in hot mix asphalt pavements for over 35 years. In accordance with the reporting requirements, the following items demonstrate the efforts of the Department in FY 2022:

1. The legislature encourages the department to examine the use of alternative road surface materials, including recycled materials, and to develop criteria and specifications for their use in both department-managed and contracted projects.

MDOT continues to work with its construction industry partners to identify and examine the use of alternative road surface materials, including recycled materials. Currently, MDOT has permissive specifications for the use of Reclaimed Asphalt Pavement (RAP), Recycled Asphalt Shingles (RAS), recycled tire rubber, and recycled concrete pavement, which means these materials are allowed in certain situations as noted in the individual material specifications. When allowed, it is the contractor's option, based on their own economic analysis. In addition, MDOT continues to monitor a project constructed in 2013, which made use of recycled tires by incorporating them into the asphalt mixture. A Hot-in-Place Recycled project was constructed in 2015 that continues to be monitored. Hot-in-Place recycling is a process which heats up existing pavement, removes the top layer, mixes in emulsion additives, and then immediately places the recycled asphalt back as the top, driving surface. Furthermore, a project utilizing reinforcing fibers in the hot mix asphalt was constructed in 2021 and another in 2022. MDOT will monitor both projects. Reinforcing fibers are a synthetic fiber that is pelletized and incorporated into the hot mix asphalt during plant production.

2. The department shall report on efforts taken to implement this section. The report shall include the descriptions of specific materials evaluated, evaluation methods, and results of specific field or laboratory tests. The department shall complete and submit the report to the state budget director, the house and senate appropriations subcommittees on transportation, and the house and senate fiscal agencies on or before March 1 of each year.

a. **Crumb Rubber/Recycled Tire Rubber:** MDOT developed a permissive specification for use of recycled tire rubber. The specification included modifications to address performance issues identified on Local Agency projects and MDOT's 2013 pilot project. Premature stressing on these projects is believed to be related to modifications or waiver of the Performance Grade (PG) Binder tests. Since MDOT specifications disallow altering or waiving of the American Association of State Highway and Transportation Officials PG Binder tests, acceptance on future projects incorporating recycled tire rubber will be based on a combination of field inspection and testing. As part of the pavement's routine maintenance cycle, the pilot project was crack sealed in 2021 during a region-wide crack sealing project.

MDOT has continued partnering efforts with the Michigan Department of Environment, Great Lakes, and Energy (EGLE). This includes assistance in the review of applications for the EGLE recycled tire grants as well as providing feedback on the application process and on selection criteria for the grants.

MDOT also continues to meet with industry and academia regarding new technologies and research related to recycled tires.

b. **Reclaimed Asphalt Pavement (RAP)/Recycled Asphalt Shingles (RAS):** MDOT continues to base acceptance of asphalt mixes, including those containing RAP/RAS, on a combination of field inspection and testing.

c. **Hot-in-Place Recycling:** The pilot project continues to be monitored for performance to determine if this is a viable fix for MDOT to use in the future and if any revisions need to be made to the specification for future projects. The pavement continues to be monitored to determine the appropriate time to apply a future surface seal to keep water out of the pavement and further extend the life of the pavement.

d. **Reinforcing Fibers:** There are two pilot projects in Metro Detroit using reinforcing fibers. The first project was constructed in 2021 and the second was constructed in 2022 with no issues or challenges noted by MDOT or contractor personnel. MDOT will monitor the performance of both projects to determine if this is a beneficial addition.